# Innovative Service and Business Model

## for Photovoltaic Power Plants of Multiple Dwellings in Austria

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*Courtesy of* ***ENW Gemeinnützige WohnungsGmbH, Graz***

## Introduction

In Austria, photovoltaic (PV) power plants have rarely been installed on multiple dwellings. The purpose of this project idea is to facilitate these installations by developing a special business model. Sinking PV feed-in tariffs and prices for PV modules (see Figure 1) are making on-site consumption of PV power economically more attractive. In the new business model the majority of the produced PV electricity will be consumed on-site by the residents of the multiple dwelling. The legal form of a cooperative society will be examined. With the involvement of the municipality, part of the produced energy could be used for other local energy needs of the municipality.

*Courtesy of* ***Housing cooperatives of the project Freiraum Maxglan in Salzburg***

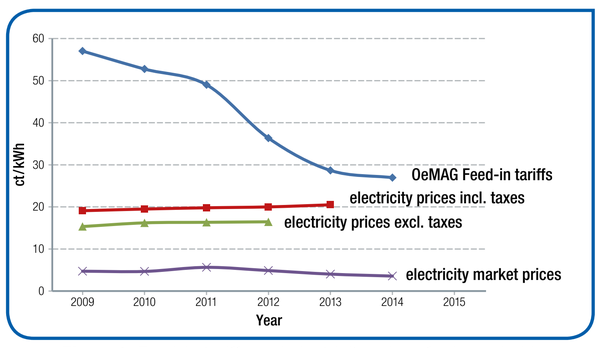


***Figure1****: Feed-in tariffs and electricity prices for households (with and without taxes) and electricity market prices for Austria (sources: [1], [2], [3]).*

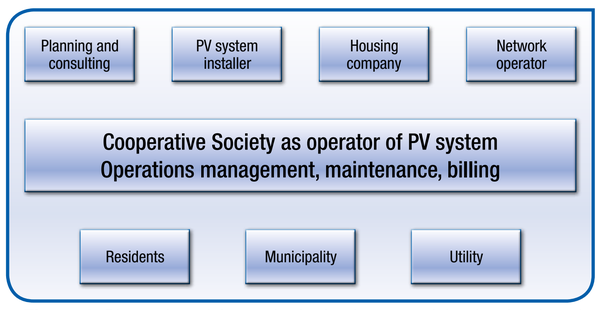


***Figure 2****: Planned participants in the business model to be developed.*

## Approach

In the project we plan to choose representative multiple dwellings with apartment owners as residents. In the course of this study barriers for implementing such a business model will be assessed, and technical and legal as well as administrative issues will be evaluated. User behavior patterns and load profiles will be examined and the economic feasibility of the new business model analyzed. Also stakeholders will be involved in this process. The study comprises essentially seven steps:

- **Step 1** includes a first outline of the new business model with special needs for multiple dwellings and the on-site consumption of produced electricity by the residents and nearby municipal facilities. It is essential that the residents of a multiple dwelling, the housing development company, the PV system installer, the municipality, and the electricity utility participate in this business model (Figure 2).
- **Step 2** defines all technical needs for a PV installation on a multiple dwelling. The technical concept of such a PV installation is outlined in Figure 3. The following four different cases of PV installations will be evaluated:
  a. Roof mounted PV,
  b. Roof-integrated PV,
  c. Facade-integrated PV and
  d. Extension of existing PV.
- **Step 3** deals with clarification of legal questions concerning non-profit housing development companies and common eco-power production by PV plants on multiple dwellings. We will examine the legal form of a cooperative society for the operation of a PV plant.
- **Step 4** addresses all administrative aspects, such as clarification of efforts for administration and models of reimbursement of costs, and the evaluation of costs and consequences for operating PV plants.
- **Step 5** covers user-specific aspects; for example, the adaptation of user-habits to reduce the consumption of electricity to times of solar power production. The deployment of smart meters will allow users to monitor their consumption of electricity in a real time system.
- **Step 6** includes an economic analysis, in which the four cases of PV plants (defined in step 2) will be evaluated using the proposed new business model. The advantages or disadvantages of this concept will be shown in comparison to an already existing business model in which all electricity generated is fed into the public grid.
- In **Step 7** the results from step 1 to 6 will be evaluated, summarized and used for the final definition of the new business model. The results of the project will be presented and discussed with stakeholders.

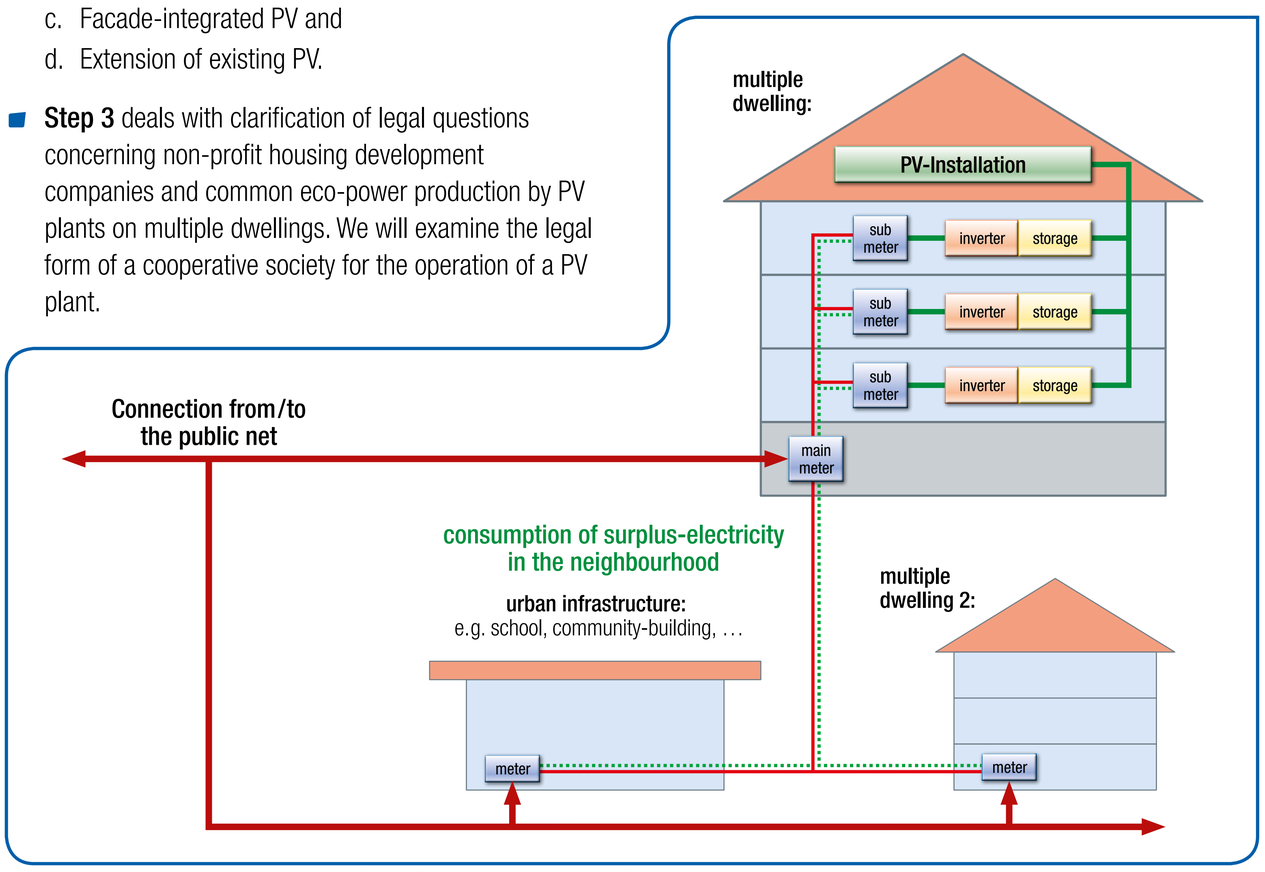


***Figure 3****: Technical concept of a PV installation on a multiple dwelling and on-line consumption by residents and other local energy needs of the municipality.*

## Results

The new service and business model for PV on multiple dwellings concentrates specifically on how the produced electricity can be consumed in an economically feasible way on-site by the residents with the surplus used by other local energy needs of the municipality.

The following results are planned to be covered in the project:

- Clarification of the legal frameworks in case study countries;
- Development of a business model which facilitates the use of PV in multiple dwellings, and provides an easy-to-run administrative model;
- Provision of a range of criteria, relevant for residents, to use the produced electricity as far as possible themselves, and to benefit from possible cost savings;
- Provision of electricity surpluses to the municipality;
- Documentation of the economic benefits of this concept for self-consumption of PV electricity and
- Creation of awareness for energy efficiency optimization and for an increased use of renewables in the form of PV among residents of dwellings with linked emission reductions.

**This business model could also be of interest for other EU countries. The project team is searching for partners for a future cooperation (e.g. HORIZON 2020).**

## References

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